CLAIMS

1. A system accessing and transmitting different data frames in a digital transmission network, for accessing and transmitting different data frames, said system comprises:

At least a user-network interface (UNI), which is used to couple with the subscriber's network; and/or at least a network-network interface (NNI), which is used to couple with said digital transmission network to transfer data; and

A data converting device, coupled with said UNIs and said NNIs, which is used to convert data formats between said UNIs or data formats between said NNIs or data formats between said UNIs and said NNIs;

Said data converting device comprises a virtual bridge device and an interface device, said virtual bridge device switches data between said UNIs and said NNIs, and said virtual bridge device detects control messages, and transmits the control messages to control system of the device to process via the control interface unit; and data frames of message except control messages are switched;

Said virtual bridge device comprises: an inter-device interface, which is used to input and output data frames; a virtual bridge processing unit, which couples with said inter-device interface to process data; a database, which stores information corresponding to types of data and couples with said virtual bridge processing unit so as to process data according to said information, a control interface unit, which couples with said database and said virtual bridge processing unit so as to control them.

2. A system accessing and transmitting different data frames in a digital transmission network according to claim 1, wherein said data converting device comprises a data processing and dispatching device or a virtual interface device, said inter-device interface connects with said data processing and dispatching device or/and said virtual interface device.

3. A system accessing and transmitting different data frames in a digital transmission network according to claim 1, wherein said database comprises a virtual bridge database, a multicasting database and a forwarding database; said multicasting database and said forwarding database store virtual bridge number, virtual bridge input port, destination address input, VLAN number input, VMAN number input, virtual bridge output port; said virtual bridge database stores type number input, virtual bridge number, port number, type number output.

4. A system accessing and transmitting different data frames in a digital transmission network according to claim 1, wherein said control interface unit provides an external control interface and adds, deletes, modifies and searches in said database via said control interface, and monitors said virtual bridge processing unit.

5. A system accessing and transmitting different data frames in a digital transmission network according to claim 1, wherein said virtual bridge processing unit processes data frames according to embedded logic and controls formats of forwarding items in the forwarding database, formats of multicasting items in the multicasting database, and formats of items in the virtual bridge database.

6. A method of accessing and transmitting different data frames in a digital transmission network through the system of claim 1, said system comprises a virtual bridge device, wherein said method comprises the following steps:

Determining whether the data frames entering said virtual bridge device via the inter-device interface are control messages;

If they are control messages, transmitting the data frames to the external control system via the control interface unit and ending the process;

If they are not control messages, extracting input data type number and destination address information from the data frames;

Searching in the database according to the type number and determining whether the retrieval result is blank;

If the retrieval result is blank, discarding the data frames and ending the process;

If the retrieval result is not blank, extracting relevant information from the retrieval result;

Determining the processing flow according to said destination address information;

If the destination address is a multicasting address, performing the multicasting sub-flow, and then ending the process;

If the destination address is a broadcasting address, performing the broadcasting sub-flow, and then ending the process;

Otherwise going to the next step;

Searching in the database according to the second rule constituted by the obtained input data information;

If the retrieval result is blank, performing the broadcasting sub-flow or discarding said data frames and ending the process;

If the retrieval result is not blank, modifying the data frames, and sending said data frames via the inter-device interface, and then ending the process.

7. A method according to claim 6, wherein said step of extracting input data type number and destination address information from the data frames also comprises a step of extracting source address of input data and VLAN number.

8. A method according to claim 6, wherein the step of searching in the database according to the type information and determining whether the retrieval result is blank further comprises:

Searching in the virtual bridge database with the index of extracted data type number information;

The step of extracting relevant information from the retrieval result comprises: extracting the virtual bridge number and port number from the retrieval result; learning the source address and updating the forwarding database according to the learning result.

9. A method according to claim 8, wherein the step of searching in the database according to the second rule constituted by the obtained input data information comprises: searching in the forwarding database with the index of the virtual bridge number, port number, destination address, VLAN number as indexes; said second rule is whether the virtual bridge number, port number, destination address, VLAN number are found.

10. A method according to claim 9, wherein the step of modifying data frames and outputting said data frames via the inter-device interface comprises:

Extracting output port number information from the retrieval result;

Searching in the virtual bridge database with the index of virtual bridge number and output port number;

Determining the retrieval result,

If the retrieval result is blank, discarding the data frames and ending the process;

If the retrieval result is not blank, extracting output type number information from the retrieval result and modifying the data frames, i.e., replacing the type number in the data frames with the output data type number;

Outputting the modified data frames via the inter-device interface.

11. A method according to any of claim 6 to 10, wherein said broadcasting sub-flow comprises:

Searching in the virtual bridge database for the first item corresponding to the virtual bridge with the index of the virtual

bridge number;

determining the retrieval result,

If the retrieval result is blank, discarding said data frames and ending the sub-flow;

If the retrieval result is not blank, comparing the input type number in the retrieval result with the type number in the data frames;

If they are equal, search in the virtual bridge database for the next item corresponding to said virtual bridge with the index of the virtual bridge number, and then returning to determining the retrieval result;

If they are not equal, copying the data frames, extracting output data type number from the retrieval result and modifying the copied data frames (i.e., replacing the type number in the copied data frames with the output data type number), and then outputting the modified copied data frames via the inter-device interface.

12. A method according to any of claim 6 to 10, wherein said multicasting sub-flow comprises:

With the index of the virtual bridge number, input port, destination address, and VLAN number, searching in the multicasting database for the first item corresponding to these key words;

Determining the retrieval result,

If the retrieval result is blank, discarding said data frames and ending the sub-flow;

If the retrieval result is not blank, comparing the output port number in the retrieval result with the extracted input port number (i.e., in the virtual bridge database, the input port number corresponding to the data frame type number);

If they are equal, searching in the multicasting database for the next item with the index of the virtual bridge number, input port, destination address, and VLAN number, then returning to determine the retrieval result;

If they are not equal, searching in the virtual bridge database with the index of the virtual bridge number and output port number;

If the retrieval result is blank, discarding said data frames, and searching in the multicasting database for the next item with the index of the virtual bridge number, input port, destination address, and VLAN number, and returning to determining the retrieval result;

If the retrieval result is not blank, copying said data frames, extracting output type number from the retrieval result, modifying the copied data frames (i.e., replacing the type number

in the copied data frames with the output data type number), and then outputting the modified copied data frames via the inter-device interface.